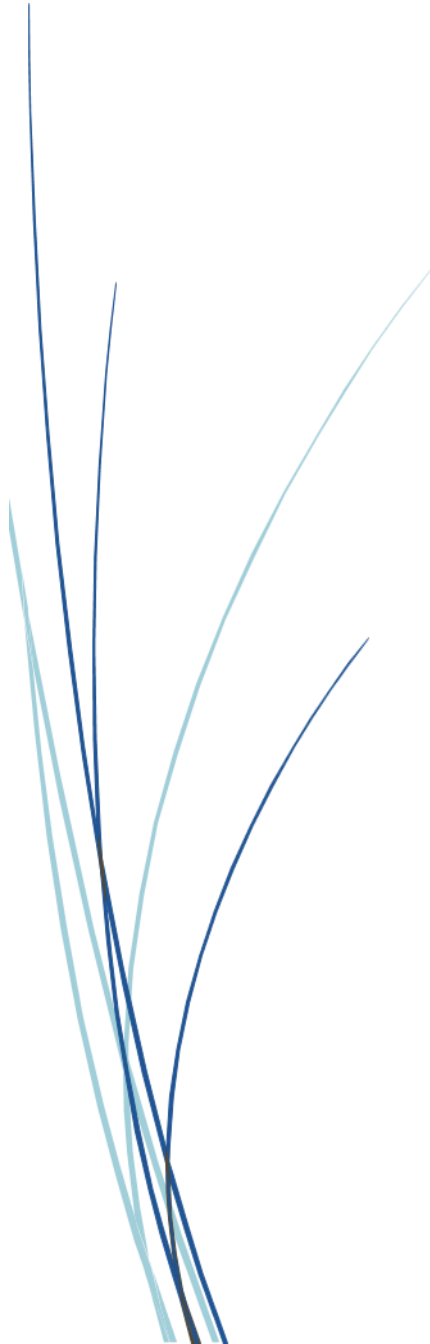


Boundary and Annexation Survey (BAS) Technical Guide

Supplemental technical and background information for BAS.



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INTRODUCTION

This How-to Guide contains supplemental technical information about U. S. Census Bureau Geography, BAS submission information, change types, and shapefiles. This information is applicable for all three BAS submission methods – the BAS Partnership Toolbox, the Geographic Update Partnership Software (GUPS), and Paper. For detailed instructions on creating a BAS submission using one of these three methods, see the corresponding How-to Guide located on the BAS website at <<https://www.census.gov/programs-surveys/bas/information/respondent-guides.html>>.

CHAPTER 1 CENSUS BUREAU SYSTEMS AND DATA INTEGRITY

The Census Bureau Geography Division is responsible for developing geographic applications and executing related activities needed to support the Census Bureau in collecting and disseminating data. For more than twenty years, the Census Bureau's Master Address File and Topologically Integrated Geographic Encoding and Reference (MAF/TIGER) System has been a critical resource for supporting the Census Bureau Geographic Partnership Programs.

The following section will describe how the Census Bureau uses a topologically integrated system and how this differs from traditional GIS, which use separate layers of data.

1.1 Topological Relationships in the MAF/TIGER System

At the Census Bureau, topology is described as the spatial relationship between different levels of geography. MAF/TIGER is a geographic database in which the topological structures define the location, connection, and relationships of streets, rivers, railroads, and other features. These topological structures help define the geographic areas for which the Census Bureau tabulates data.

Instead of having a separate layer for each feature class (roads, boundaries, etc.), all information in MAF/TIGER is stored in one layer or file. See [Figure 1](#) for a sample of topologically integrated data in MAF/TIGER.

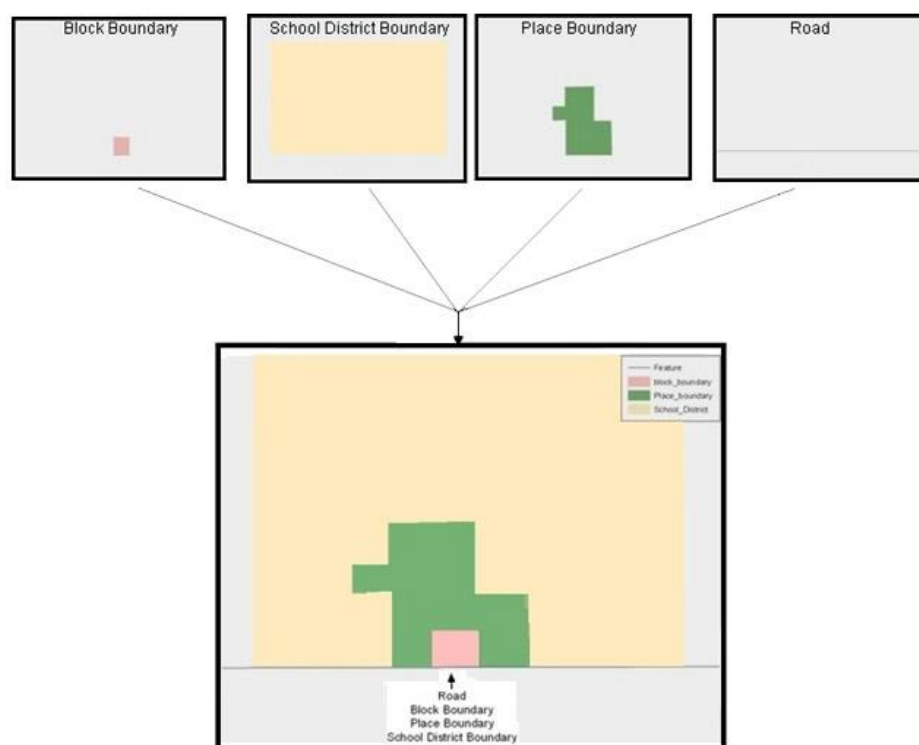


Figure 1. Topological Integration of Four Feature Classes

This example shows the topological integration of four different feature classes into one layer. One road feature represents not only a road, but also a block boundary, place boundary, and a school district boundary.

1.2 GIS and Spatial Accuracy

In a GIS, feature classes are often not topologically integrated; they are separated into individual datasets. When these datasets are overlaid in a GIS, there may be boundary misalignments due to the nature of the data. These non-topologically integrated datasets could cause issues in MAF/TIGER. [Figure 2](#) shows how files that are not topologically integrated might appear in a GIS when overlaid.

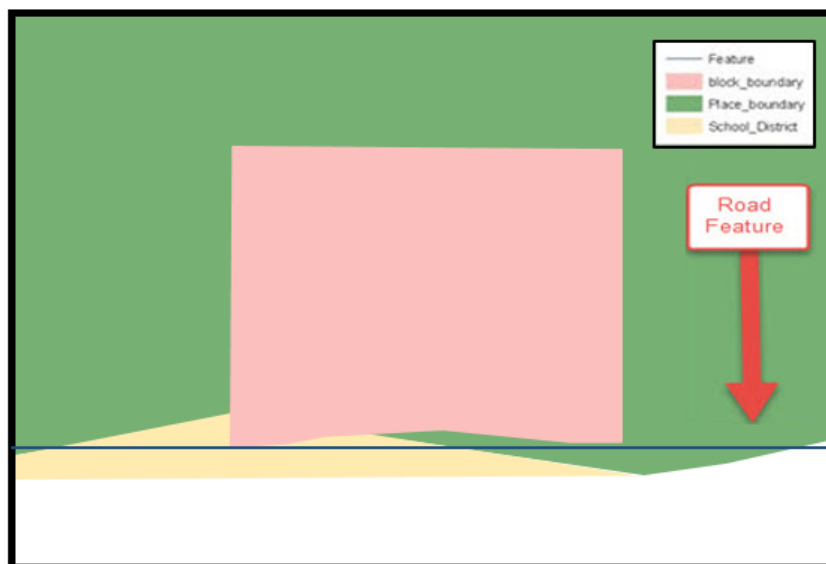


Figure 2. Overlay of Four Feature Classes

This example shows an overlay of four separate feature classes. Notice how the topological relationship is compromised. The block, place, and school district boundaries, which are supposed to follow the road feature, are no longer aligned with the road in several locations.

The spatial differences between local GIS data and the Census Bureau’s topologically integrated file are often very small (less than ten feet) and can create boundary-to-feature relationship issues for the Census Bureau. To avoid such issues, the Census Bureau will snap boundary changes to a MAF/TIGER feature when it exists within **thirty** feet of that feature as shown in [Figure 3](#). This ensures that housing and population are correctly tabulated to all geographies.

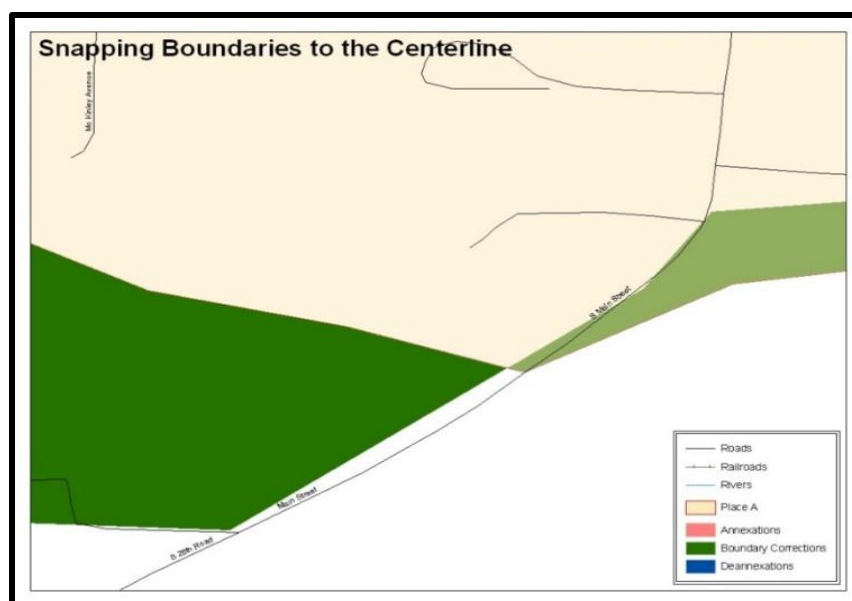


Figure 3. Snapping Boundaries to the Centerline

These boundary corrections are not snapped to existing linear features in MAF/TIGER. The Census Bureau will snap both boundary corrections to the centerlines to avoid population being assigned to incorrect governments.

1.3 Census Bureau Geocoding

Geocoding is how the Census Bureau codes the location of the housing and population within the boundaries of a geographic area. There are two primary methods of geocoding used by the Census Bureau, and both involved coding an address to a spatial polygon. One uses Global Positioning System (GPS) technology to create a Master Address File (MAF) structure point (MSP), and the other uses address ranges for geocoding.

1.3.1 MAF Structure Point (MSP) Geocoding

To collect a MAF Structure Point (MSP), a field worker stands in front of a house or living quarters and records the physical location with a GPS device ([Figure 4](#)). Usually, the GPS point should fall very close to the front door of the house. However, since GPS points are collected in the field, real-world obstacles like locked fences, poor satellite reception, or even aggressive dogs might prevent the field worker from gaining access to the front door. In these circumstances, the field worker may have to take the GPS coordinate from the sidewalk or side of the road.

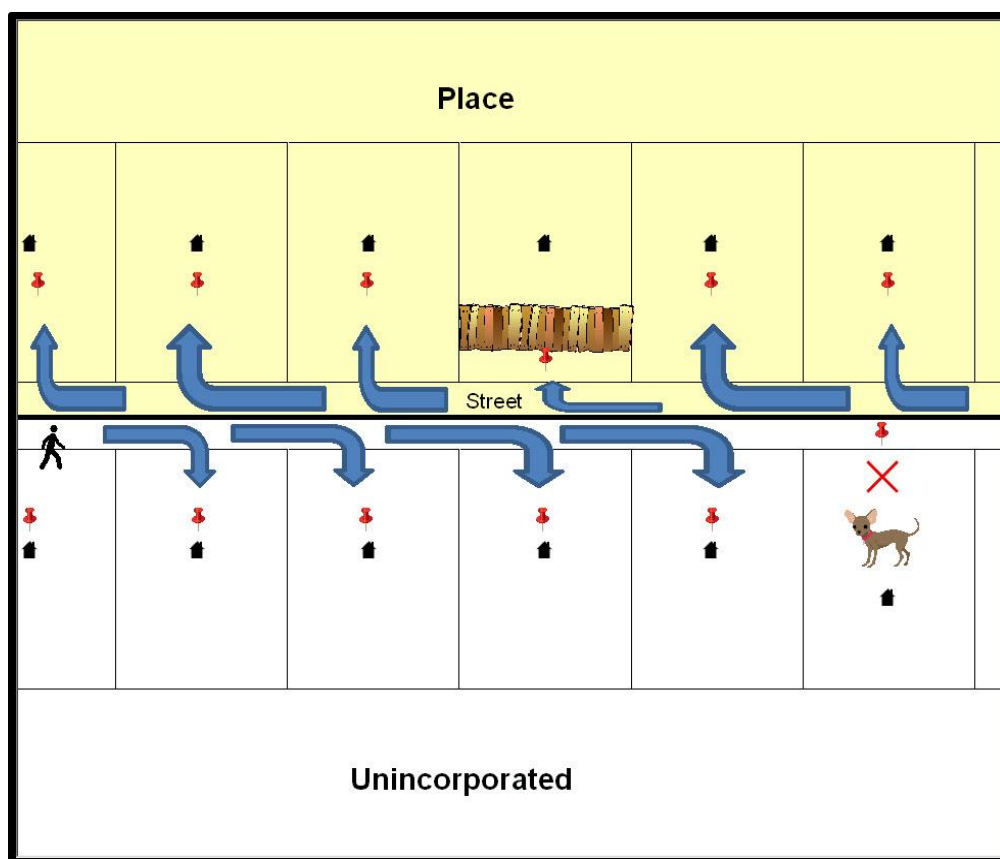


Figure 4. GPS Method of Geocoding

Notice that it is occasionally not possible for the field worker to go all the way to the front door due to unforeseen circumstances, like the fence or the dog shown above. Thus, the MSP (represented here by the red pins) can sometimes fall within the road or the road right-of-way.

1.3.2 Address Range Geocoding

When it is not possible to collect an MSP, the Census Bureau codes houses and living quarters according to the address range associated with the adjacent stretch of road ([Figure 5](#)). Address ranges describe a label given to a unique collection of addresses that fall along a road or path. Address ranges provide a way of locating homes and business based on their street address when no other location information is available. The Census Bureau devises numerous operations and processes to build and maintain high quality address ranges.

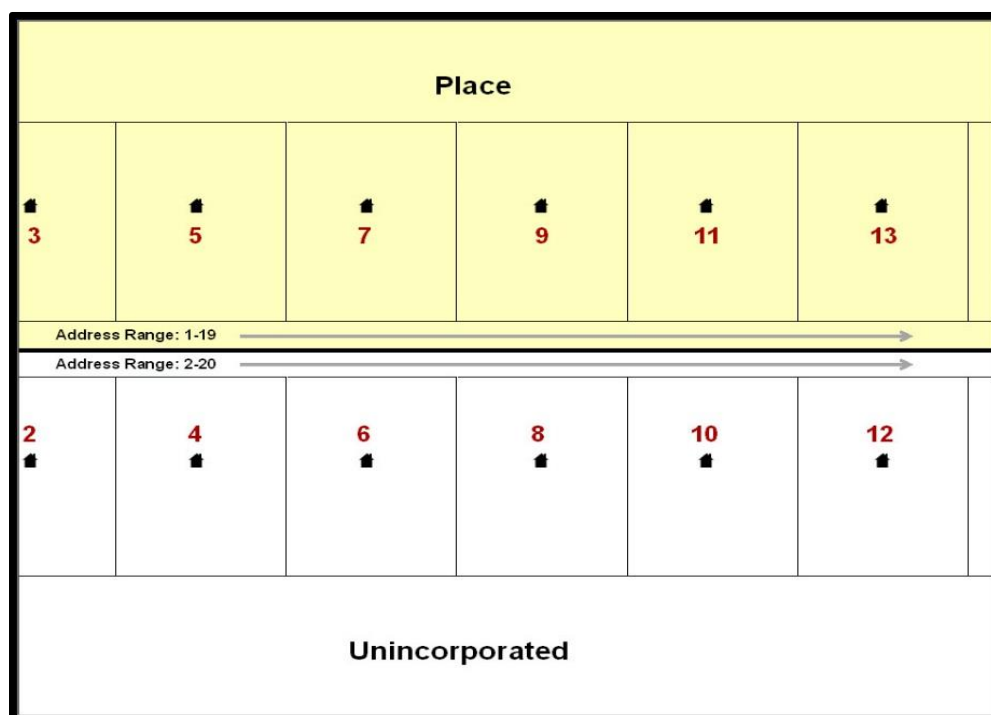


Figure 5. Address Range Geocoding

When it is not possible to collect an MSP, houses are geocoded according to their placement along a range of potential addresses along that road. Since the address has a relationship with the road, boundaries placed on front-lot-lines will lead to mis-geocoding unless an offset flag is used.

1.3.3 Geocoding, Boundaries and BAS Submissions

While the two methods of geocoding differ greatly, both rely heavily on the integrated nature of the MAF/TIGER system. These geocoding methods are affected by the way streets and boundaries are represented in relation to one another. This interdependence between streets, boundaries, and geocoding means that Census Bureau representation of legal boundaries may sometimes differ from other representations (e.g., in local or state GIS). This is especially important when adding geographic corridors and offsets that follow road right of ways (or the front-lot-lines of parcels). In both [Figure 4](#) and [Figure 5](#), delineating a boundary along the front-lot-line will tend to increase the risk of incorrect geocoding. As a result, using the road centerline as a boundary is the safer method.

If a road or road right-of-way is owned or maintained by a place but the adjacent housing is not, the centerline of the road should be used as the boundary whenever possible.

If local or state law requires the use of the front-lot-line boundary, the area between the road centerline and the front-lot-boundary should be designated as a corridor or an offset.

CHAPTER 2 BAS SUBMISSION INFORMATION

2.1 BAS IDs

The BAS ID is the number the Census Bureau uses to identify each government. All federally recognized American Indian areas (AIA), counties (and equivalent areas), incorporated places, consolidated cities, and Minor Civil Divisions (MCDs) are assigned and identified by unique BAS IDs. Each government BAS ID can be found on the BAS Annual Response email sent at the start of each BAS year, or online at <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

2.2 Federal Information Processing Standards (FIPS) Codes

The Census Bureau recommends using FIPS codes to identify governments such as counties, MCDs, and incorporated places. Using a standard coding scheme facilitates the digital exchange of data. The Census Bureau includes these codes in the BAS shapefiles in the fields that end in 'FP'. The codes can be found online at <<https://www.census.gov/programs-surveys/bas/technical-documentation/code-lists.html>>.

2.3 Submission File Naming Conventions

The following tables provide the naming conventions for the various submission shapefiles.

For all tables in this section, <basID> represents the participant's BAS ID and <yy> represents the current year.

2.3.1 Change Polygon Shapefile

The following table provides change polygon shapefile naming conventions. The BAS ID for the participant should be used when naming the shapefiles even if they are submitting changes for another level of geography.

Table 1: Change Polygon Shapefile Naming Conventions

Participant	Submitting Changes For:	Shapefile Naming Conventions
County	County	bas<yy>_<basID>_changes_county.shp
County	Minor Civil Division	bas<yy>_<basID>_changes_cousub.shp
County	Incorporated Place	bas<yy>_<basID>_changes_incplace.shp
Minor Civil Division	Minor Civil Division	bas<yy>_<basID>_changes_cousub.shp
Incorporated Place	Incorporated Place	bas<yy>_<basID>_changes_incplace.shp
Consolidated City	Consolidated City	bas<yy>_<basID>_changes_cousub.shp
County	Census Designated Places	bas<yy>_<basID>_changes_cdp.shp
AIA	AIA	bas<yy>_<basID>_changes_aiannh.shp

Participant	Submitting Changes For:	Shapefile Naming Conventions
AIA	Tribal Subdivision	bas<yy>_<basID>_tribalsub.shp
Hawaiian Home Lands	Hawaiian Home Lands	bas<yy>_<basID>_hhl.shp

2.3.2 Whole Entity Polygon Shapefile

The following table provides the whole entity polygon shapefile naming conventions. The BAS ID for the participant should be used when naming the shapefiles even if they are submitting changes for another level of geography.

Table 2: Whole Entity Polygon Shapefile Naming Conventions

Participant	Submitting Changes For:	Shapefile Naming Conventions
County	County	bas<yy>_<basID>_WholeEntity_county.shp
County	Minor Civil Division	bas<yy>_<basID>_WholeEntity_cousub.shp
County	Incorporated Place	bas<yy>_<basID>_WholeEntity_incplace.shp
Minor Civil Division	Minor Civil Division	bas<yy>_<basID>_WholeEntity_cousub.shp
Incorporated Place	Incorporated Place	bas<yy>_<basID>_WholeEntity_incplace.shp
Consolidated City	Consolidated City	bas<yy>_<basID>_WholeEntity_cousub.shp
AIA	AIA	bas<yy>_<basID>_WholeEntity_aiannh.shp
AIA	Tribal Subdivision	bas<yy>_<basID>_WholeEntity_tribalsub.shp
Hawaiian Home Lands	Hawaiian Home Lands	bas<yy>_<basID>_WholeEntity_hhl.shp

2.3.3 Linear Feature and Landmark Changes Shapefile

The following table provides the update layer naming conventions for the linear feature, area landmark, hydrographic area, and point landmark update layers. The BAS ID for the participant should be used when naming the shapefiles even if they are submitting changes for another level of geography.

Table 3: Linear Feature and Landmark Changes Shapefile Naming Conventions

Participant	Submitting Changes For:	Shapefile Naming Conventions
All Participants	Linear Features	bas<yy>_<basID>_changes_ln.shp
All Participants	Area Landmarks/ Hydrographic Areas	bas<yy>_<basID>_changes_alndk.shp
All Participants	Point Landmarks	bas<yy>_<basID>_changes_plandk.shp

CHAPTER 3 SUBMISSION TYPES

The Census Bureau accepts submissions for changes to legal boundaries, CDPs, linear features, and landmarks through BAS.

To update the MAF/TIGER system, participants must create a separate change polygon layer for each updated government type (county, MCD, place). Change polygons should be created in relation to the current MAF/TIGER boundary.

The Census Bureau will snap any legal change or boundary correction to a MAF/TIGER feature when it exists within **thirty** feet of that feature.

3.1 Legal Boundary Submissions

Legal boundary submissions include any updates to legal boundaries, including incorporated places, MCDs, counties, and tribal governments. Change types available for legal boundary submissions are legal boundary changes, boundary corrections, geographic corridors and offsets, and tribal subdivisions.

3.1.1 Legal Boundary Changes

Legal boundary changes are the result of legal actions. These include:

- Annexations or additions
- Deannexations or deletions
- New Incorporations
- Disincorporations

Legal boundary change submissions from incorporated places, MCDs, and counties must provide the legal documentation number (e.g., law or ordinance number), effective date, and authorization type in the appropriate fields of the changes shapefile. For annexations and deannexations, the Census Bureau does not need the document itself to accept the changes as long as the required information is contained within the shapefile. AIA legal documentation (e.g., statute, federal court decision, trust deed) must accompany all AIA legal boundary changes.

New incorporation paperwork and disincorporation paperwork must be provided with those changes, and new incorporations should also include contact information for the Highest Elected Official (HEO) and BAS contact of the newly incorporated government.

3.1.2 Boundary Corrections

A boundary correction is the spatial adjustment of a boundary to correct an error in how the Census Bureau depicts an existing boundary. Boundary corrections should follow the general shape of the existing boundary. Legal documentation is not required when submitting a boundary correction to the Census Bureau.

The Census Bureau **will** accept and process boundary corrections:

- In situations where the existing boundary has been digitized incorrectly or appears in the incorrect location due to Census Bureau activities.
- The overall shape of the geographic area is maintained, and no feature-to-boundary relationships are dissolved.

The Census Bureau **will not accept** boundary corrections:

- Along county boundaries, unless there is a written agreement between the two counties that documents the correct location of the boundary.
- Between adjacent incorporated places or adjacent MCDs, unless the changes are submitted by a county that is part of a Consolidated BAS (CBAS) agreement or there is a written agreement between the two incorporated places or MCDs.
- That dissolve boundary-to-feature relationships (roads, rivers, railroads, etc.) if the difference is less than thirty feet.
- Which are greater than one square mile, or not contiguous with the rest of the government boundary. These boundary corrections may be part of annexations that were never reported to the Census Bureau. If they are previously unreported legal changes, legal documentation is required.
- That have a width of less than thirty feet at the widest point unless the change affects a housing unit.

3.1.3 Geographic Corridors

The Census Bureau geocodes addresses based on the street centerline. If the geocoding of these addresses would result in the assignment of population to the incorrect government, a geographic corridor should be created.

A geographic corridor is an area that includes only the road (or other feature's) right-of-way and does not contain any structures addressed to either side of the street. [Figure 6](#) shows a corridor (shown in color) created where the incorporated place annexed the right-of-way, but the housing units are not included in the incorporated place. These are often used to connect two disconnected parts of a government when local law does not permit for discontinuous annexations. This type of corridor can be included in a BAS submission.

[Figure 7](#) shows that the right-of-way belongs in the unincorporated area, while the housing units are included in the incorporated place (shown in color). This is important for some cities because they are portraying that the city is not responsible for road maintenance. This is not relevant for Census Bureau tabulations and is not easy to depict in MAF/TIGER. This type of corridor should not be included in a BAS submission.

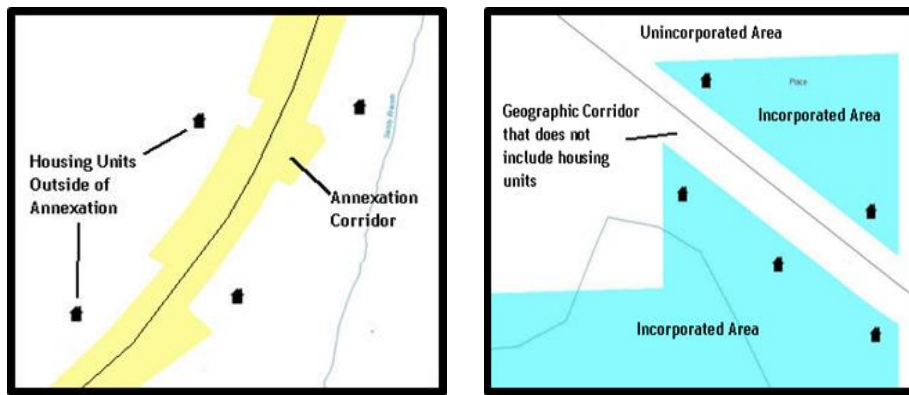


Figure 6. Geographic Corridor Created

Figure 7. Geographic Corridor Not Created

The image on the left (Figure 6) shows a corridor that has been created where an incorporated place annexed the road right-of-way, but not the housing units assigned to either side of the road. The image on the right (Figure 7) shows that the geographic corridor should not be created and features should be snapped to the street centerline.

3.1.4 Geographic Offsets

A geographic offset is an area claimed by a government that is only on one side of a road and does not include structures addressed to that side of the road.

The Census Bureau is aware that many governments base their legal boundaries on cadastral (parcel-based) right-of-way mapping. The Census Bureau bases its maps on spatial data that is topologically integrated, which makes the maintenance of geographic offsets inefficient. Delineating a government boundary on the road centerline helps establish more accurate population counts. If a boundary is on the front-lot-line adjacent to a road on the map, the Census Bureau prefers that the boundary be delineated on the road centerline already shown on the map. If a boundary is on the rear or side lot line, then it should be depicted as such. [Figure 8](#) depicts a cadastral boundary map and [Figure 9](#) shows how the boundary should be reported to the Census Bureau.

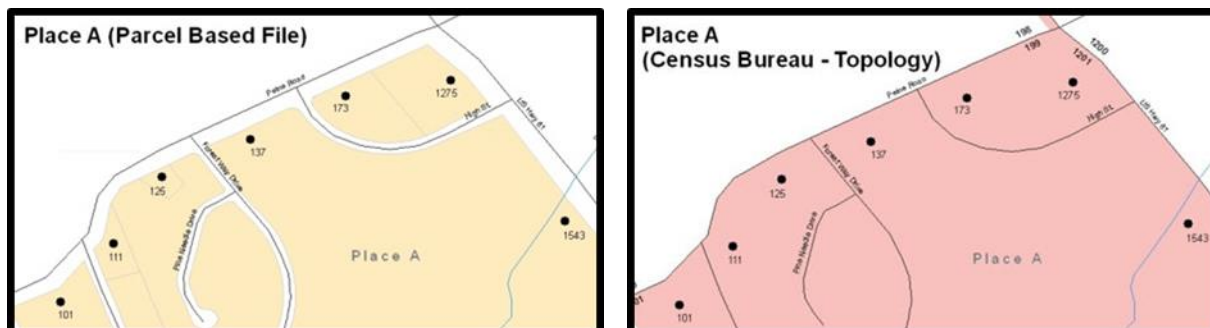


Figure 8. Cadastral Data

Figure 9. Cadastral Data Edited to Census Requirements

On the left in Figure 8 is an example of cadastral data. Figure 9 on the right is the same area shown edited to conform to Census Bureau requirements.

3.1.5 Tribal Subdivisions

The Census Bureau considers any type of unit of self-government or administration in tribal areas as a tribal subdivision. A tribe may submit only one type of subdivision, even if it has more than one type of distinct administrative area that could qualify as a tribal subdivision (e.g., tribal election districts, tribal water districts, or health service areas with different boundaries). Tribal subdivisions can only exist on the reservation and off-reservation trust land, but tribal subdivisions do not have to cover the entire reservation and trust land. The Census Bureau recognizes two types of tribal subdivisions - active (A) or inactive (I):

- Active subdivisions are defined as having a functioning government, with elected officials, that provides programs and services.
- Inactive subdivisions have no functioning government or elected officials and receive services solely from the tribe.

The name of each tribal subdivision must reflect its name, as cited in recent legal documentation and/or used by the tribal government, for administrative purposes.

3.2 Census Designated Place (CDP) Submissions

Census designated places (CDPs) are statistical geographic entities representing closely settled, unincorporated communities that are locally recognized and identified by name. They are the statistical equivalents of incorporated places, with the primary differences being the lack of a legally defined boundary and an active, functioning governmental structure, chartered by the state and administered by elected officials.

Participants have the option to submit new CDPs, make boundary corrections to existing CDPs, and remove CDPs through BAS.

3.3 Linear Feature Submissions

It is important that Census Bureau data reflects the most recent linear features to ensure that new or previously missed housing units located along these features are identified and located. The Census Bureau will accept linear feature modifications for the following situations:

- When a road is missing from the Census Bureau's feature network and needs to be added.
- When a road in the Census Bureau's feature network does not exist and should be deleted.
- When a feature is in the incorrect location in the Census Bureau's feature network and should be moved.
- When a feature has the incorrect name and/or MTFCC assigned in the Census Bureau's feature network.

The Census Bureau will also accept address range data as part of the linear feature update shapefile. Since existing address ranges cannot be shown in the Census Bureau's outgoing shapefiles, it is recommended that address ranges only be submitted for new features.

More information about MAF/TIGER Feature Classification Codes (MTFCC) can be found in [Section 4.4](#).

3.4 Landmark Submissions

Area landmarks, hydrographic areas, and point landmarks can be added, deleted, and renamed through BAS.

Acceptable area landmark updates include water bodies, swamps, quarries, national parks, and forests. Acceptable point landmark updates include mountain peaks or summits, libraries, city halls, community centers, and police stations. Airports, parks, schools, golf courses, museums, and cemeteries may be submitted as area landmarks or point landmarks.

3.4.1 Area Landmarks and Hydrographic Area Updates

The Census Bureau accepts updates to area landmarks and hydrographic areas in a similar manner to legal boundary changes. However, area landmarks and hydrographic areas are not legal governments, so no documentation or effective dates are required. The acceptable MTFCC codes for new area landmarks or hydrographic areas are listed in [Table 4](#).

Table 4: Acceptable MTFCCs for New Area Landmarks/Hydrographic Areas

MTFCC	Description
H2030*	Lake/Pond
H2040*	Reservoir
H2041*	Treatment Pond
H2051*	Bay/Estuary/Gulf/Sound
H2081*	Glacier
C3023	Island
K1231	Hospital/Hospice/Urgent Care Facility
K1235	Juvenile Institution
K1236	Local Jail or Detention Center
K1237	Federal Penitentiary, State Prison, or Prison Farm
K2110	Military Installation
K2180*	Park
K2181	National Park Service Land
K2182	National Forest or Other Federal Land
K2183	Tribal Park, Forest, or Recreation Area
K2184	State Park, Forest, or Recreation Area
K2185	Regional Park, Forest, or Recreation Area
K2186	County Park, Forest, or Recreation Area
K2187	County Subdivision Park, Forest, or Recreation Area
K2188	Incorporated Place Park, Forest, or Recreation Area
K2189	Private Park, Forest, or Recreation Area
K2190	Other Park, Forest, or Recreation Area (quasi-public, independent park, commission, etc.)

MTFCC	Description
K2424	Marina
K2540	University or College
K2457*	Airport – Area Representation
K2561	Golf Course
K2582*	Cemetery

***May not be edited**

Note: If adding an MTFCC K23457 (Airport – Area Representation) area landmark, please limit the updates to major airports (major regional and international airports). The feature should show the full extent of the airport facility.

3.4.2 Point Landmark Updates

The Census Bureau cannot delete or modify any point landmarks imported from the USGS Geographic Names Information System (GNIS) database. Changes submitted for the following types of landmarks may be left unchanged:

- K2451 (Airport).
- K2582 (Cemetery).
- C3022 (Summit or Pillar).
- C3081 (Locale or Populated Place).
- C3061 (Cul-de-sacs).

Table 5 below includes MTFCCs that cannot be added to MAF/TIGER as a point landmark as MAF/TIGER no longer maintains any point landmarks with these MTFCCs. Landmarks with these codes could identify a residence or private business. Thus, it is also important not to add any of the point landmark types shown in the table using alternative MTFCCs.

Table 5. Restricted Point Landmark MTFCCs

MTFCC	Description
K1100	Housing Unit Location
K1121	Apartment Building or Complex
K1122	Rooming or Boarding House
K1223	Trailer Court or Mobile Home Park
K1226	Housing Facility/Dormitory for Workers
K1227	Hotel, Motel, Resort, Spa, Hostel, YMCA, or YWCA
K1228	Campground
K1229	Shelter or Mission
K1232	Halfway House/Group Home
K1233	Nursing Home, Retirement Home, or Home for the Aged
K1234	County Home or Poor Farm
K1235	Juvenile Institution

MTFCC	Description
K1241	Sorority, Fraternity, or College Dormitory
K1251	Military Group Quarters
K1299	Other Group Quarters Location
K2100	Governmental
K2197	Mixed Use/Other Non-residential
K2300	Commercial Workplace
K2361	Shopping Center or Major Retail Center
K2362	Industrial Building or Industrial Park
K2363	Office Building or Office Park
K2364	Farm/Vineyard/Winery/Orchard
K2366	Other Employment Center
K2464	Marina
K2500	Other Workplace
K2564	Amusement Center

CHAPTER 4 BAS PARTNERSHIP SHAPEFILES

The BAS Partnership Shapefiles reflect the legal boundaries and names for all governments, as reported through the previous year's BAS.

4.1 Accessing BAS Shapefiles

Census Bureau shapefiles can be downloaded from the BAS Partnership Shapefiles page located at <https://www.census.gov/geographies/mapping-files/2022/geo/bas/2022-bas-shapefiles.html>. Shapefiles can also be requested from the Census Bureau on a CD/DVD.

Census Bureau files are in GCS NAD83 format and can be projected into any local coordinate system/project. Most GIS software packages will allow users to transform file coordinate systems and projections.

4.2 Shapefile Names

State Level Shapefile Names – PVS_21_v2_<layername>_<SS>.shp where <SS> is the number corresponding to the state, for example, “24” and <shpname> is the abbreviation for the geography type represented in the shapefile.

Table 6: State Shapefile Names

Shapefile Layer	<shpname>
Alaska Native Regional Corporations	anrc
American Indian / Alaska Native Areas – Statistical	aias
American Indian Areas – Legal	aial
American Indian Areas – Legal	aial2020
American Indian Tribal Subdivisions– Legal	aitsl
American Indian Tribal Subdivisions– Statistical	aitss
Congressional Districts	cd
Core Based Statistical Areas	cbsa
New England City and Town Metropolitan and Micropolitan Statistical Areas	necta
Hawaiian Home Lands	hhl
School Districts (Elementary)	elsd
School Districts (Secondary)	scsd
School Districts (Unified)	unsd
State Legislative Districts (Upper / Senate)	sldu
State Legislative District (Lower / House)	sldl
Public Use Microdata Area 2020	puma2020
Public Use Microdata Area 2010	puma2010
2020 Census Tracts	tracts2020
Census Designated Places	cdp
Counties and Equivalent Areas	county

Shapefile Layer	<shpname>
2020 Counties and Equivalent Areas	county2020
County Subdivisions – Legal	mcd
Incorporated Places	place
States and Equivalent Areas	state
Tribal Block Groups	tbg
Tribal Census Tracts	tct
Urban Areas Census 2010	uac
Block Area Grouping	bag

County Level Shapefile Names – PVS_21_v2_<layername>_<SSCCC>.shp, where <SSCCC> is the number corresponding to the state and county, for example, “24001” and <shpname> is the abbreviation for the geography type represented in the shapefile.

Table 7: County Shapefile Names

Shapefile Layer	<shpname>
Alaska Native Regional Corporations	anrc
American Indian / Alaska Native Areas – Statistical	aias
American Indian – Legal	aial
American Indian Tribal Subdivisions – Legal	aitsl
American Indian Tribal Subdivisions – Statistical	aitss
Congressional Districts	cd
Core Based Statistical Areas	cbsa
New England City and Town Metropolitan and Micropolitan Statistical Areas	necta
Hawaiian Home Lands	hhl
School Districts (Elementary)	elsd
School Districts (Secondary)	scsd
School Districts (Unified)	unsd
State Legislative Districts (Upper / Senate)	sldu
State Legislative Districts (Lower / House)	sldl
Public Use Microdata Areas 2020	puma2020
Public Use Microdata Areas 2010	puma2010
Urban Growth Areas	uga
Census Block Groups	bg
Census Blocks – Current	tabblock
Census Blocks – Census 2020	tabblock2020
Census Tracts – Current	curtracts
2020 Census Tracts	tracts2020

Shapefile Layer	<shpname>
Census Designated Places	cdp
Consolidated Cities	concity
Counties and Equivalent Areas	county
County Subdivisions for counties with Legal Subdivisions	mcd
County Subdivisions for counties with Statistical Subdivisions	ccd
Incorporated Places	place
Subbarrios	submcd
Tribal Block Groups	tbg
Tribal Census Tracts	tct
Urban Areas Census 2010	uac
All Lines	edges
Area Landmark	arealm
Hydrography – Area	water
Point Landmarks	pointlm
Geographic Offsets	offset
Block Area Grouping	bag
Face Geometry with all geocodes	faces
Relationship Tables	
Topological Faces – Area Landmark Relationship	areafaces
Topological Faces – Area Hydrography Relationship	hydrofaces
Address Ranges	addr
Linear Feature Names – Fielded	allnames

4.3 Shapefile Layouts

The following tables show the shapefile layouts for the partnership shapefiles used for BAS updates.

Table 8: Edges Shapefile (PVS_21_v2_edges)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County
TLID	10	Double	Permanent Edge ID
TFIDL	10	Double	Permanent Face ID (left)
TFIDR	10	Double	Permanent Face ID (right)
MTFCC	5	String	MAF/TIGER Feature Class Code

Attribute Field	Length	Type	Description
FIDELITY	1	String	Indication to a respondent when their entity boundary has changed through spatial enhancement
FULLNAME	40	String	Decoded Feature Name with abbreviated qualifier, direction, and feature type
SMID	22	String	Spatial Tmeta ID
SMIDTYPE	1	String	Source attribution for boundary edges, PLSS, Parcels, Surveyed, etc.
RTTYP	1	String	Route type code
BBSPFLG	1	String	Indicates the Redistricting Data Project participant's submitted request of an EDGE for selection for holding
CBBFLG	1	String	Indicates status of an EDGE for a selection as a block boundary
BBSP_2020	1	String	New BBSP flag
CHNG_TYPE	4	String	Type of linear feature update
JUSTIFY	150	String	Justification
LTOADD	10	String	Left to address
RTOADD	10	String	Right to address
LFROMADD	10	String	Left from address
RFROMADD	10	String	Right from address
ZIPL	5	String	Left ZIP code
ZIPR	5	String	Right ZIP code
EXTTYP	1	Char	Extension type
MTUPDATE	10	Date	Date of last update to the edge

Table 9: Address Ranges Relationship Table (PVS_21_v2_addr)

Attribute Field	Length	Type	Description
OID	8	String	Object ID
TLID	22	Integer	TIGER Line ID
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
FROMHN	12	String	From House Number
TOHN	12	String	To House Number
SIDE	1	String	Side Indicator Flag
ZIP	5	String	5-digit ZIP code
PLUS4	4	String	ZIP+4 Code
LTOADD	10	String	Left to address
RTOADD	10	String	Right to address
LFROMADD	10	String	Left from address

Attribute Field	Length	Type	Description
RFROMADD	10	String	Right from address
ZIPL	5	String	Left ZIP code
ZIPR	5	String	Right ZIP code
ZIP4L	4	String	Left ZIP+4 Code
ZIP4R	4	String	Right ZIP+4 Code

Table 10: Census Block Shapefile (PVS21_v2_tabblock2020)

Attribute Field	Length	Type	Description
STATEFP20	2	String	FIPS State Code
COUNTYFP20	3	String	FIPS County Code
TRACTCE20	6	String	Census Tract Code
BLOCKCE	4	String	Tabulation block number
BLOCKID20	15	String	FIPS State Code, FIPS County Code, Census Tract Code, Tabulation Block Number
PARTFLG	1	String	Part flag indicator
HOUSING20	9	Double	2020 Housing
POP20	9	Double	2020 Population Count

Table 11: Census Tract Shapefile (PVS_21_v2_curtracts)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
TRACTCE	6	String	Census Tract Code
NAME	100	String	Base Name portion of the Standardized Name
TRACTID	11	String	FIPS State Code, FIPS County Code, Census Tract Code
NEW_CODE	6	String	New Tract Code
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
TRACTTYPE	1	String	Tract Characteristic Flag
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification
TRACTLABEL	7	String	Tract number used for LUCA geocoding
VINTAGE	2	String	Vintage

Table 12: American Indian Areas Shapefile (PVS_21_v2_aial)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
AIANNHCE	4	String	Census AIANNH Code
COMPTYP	1	String	Indicates if reservation (or equivalent) or off-reservation trust land is present, or both
AIANNHFSR	1	String	Flag indicating level of recognition of an American Indian, Alaska Native, or Native Hawaiian tribe or group
NAMELSAD	100	String	Name with translated LSAD
AIANNHNS	8	String	ANSI numeric identifier for AIANNH Areas
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional Status
CLASSFP	2	String	FIPS 55 class code describing an entity
PARTFLG	1	String	Part flag indicator
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type for legal area updates
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID for any boundary update
AREA	10	Double	Acreage of area update
RELATE	120	String	Relationship description
JUSTIFY	150	Char	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

Table 13: County and Equivalent Areas Shapefile (PVS_21_v2_county)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
COUNTYNS	8	String	ANSI feature code for the county or equivalent feature
NAMELSAD	100	String	Name with translated LSAD
LSAD	2	String	Legal/Statistical Area Description
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage

Attribute Field	Length	Type	Description
AUTHTYPE	1	String	Authorization type for legal area updates
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID for any boundary update
AREA	10	Double	Acreage of area update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

Table 14: County Subdivisions Shapefile (PVS_21_v2_mcd)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
COUSUBFP	5	String	FIPS 55 County Subdivision Code
NAMESAD	100	String	Name with translated LSAD
COUSUBNS	8	String	ANSI feature code for the county subdivision
LSAD	2	String	Legal/Statistical Area Description Code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing and entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type for legal area updates
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID for any boundary update
AREA	10	Double	Acreage of area update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

Table 15: Incorporated Place Shapefile (PVS_21_v2_place)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
PLACEFP	5	String	FIPS 55 Place Code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal/Statistical Area Description Code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
PARTFLG	1	String	Part flag indicator, indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type for legal area updates
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID for any boundary update
AREA	10	Double	Acreage of area update
RELATE	120	String	Relationship description
JUSTIFY	150	String	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

Table 16: Census Designated Places Shapefile (PVS_21_v2_cdp)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
PLACEFP	5	String	FIPS 55 Place Code
PLACENS	8	String	ANSI feature code for the place
NAMELSAD	100	String	Name with translated LSAD
LSAD	2	String	Legal/Statistical Area Description Code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
PARTFLG	1	String	Part flag indicator, indicates if only part of a feature is represented
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage

Attribute Field	Length	Type	Description
RELATE	120	String	Relationship description
JUSTIFIY	150	String	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

Table 17: Consolidated Cities Shapefile (PVS_21_v2_concity)

Attribute Field	Length	Type	Description
STATEFP	2	String	FIPS State Code
COUNTYFP	3	String	FIPS County Code
CONCITYFP	5	String	FIPS 55 Place Code
NAMELSAD	100	String	Name with translated LSAD
PLACENS	8	String	ANSI feature code for the place
LSAD	2	String	Legal/Statistical Area Description Code
FUNCSTAT	1	String	Functional status
CLASSFP	2	String	FIPS 55 class code describing an entity
CHNG_TYPE	2	String	Type of area update
EFF_DATE	8	Date	Effective date or vintage
AUTHTYPE	1	String	Authorization type for legal area updates
DOCU	120	String	Supporting documentation
FORM_ID	4	String	Record ID for any boundary update
AREA	10	Double	Acreage of area update
RELATE	120	String	Relationship description
JUSTIFIY	150	String	Justification
NAME	100	String	Name
VINTAGE	2	String	Vintage

4.4 MTFCC Descriptions

The MAF/TIGER Feature Classification Code (MTFCC) is a 5-digit code assigned by the Census Bureau to classify and describe geographic objects or features. A full list of MTFCC codes and descriptions can be found at <<https://www.census.gov/library/reference/code-lists/mt-feature-class-codes.html>>.